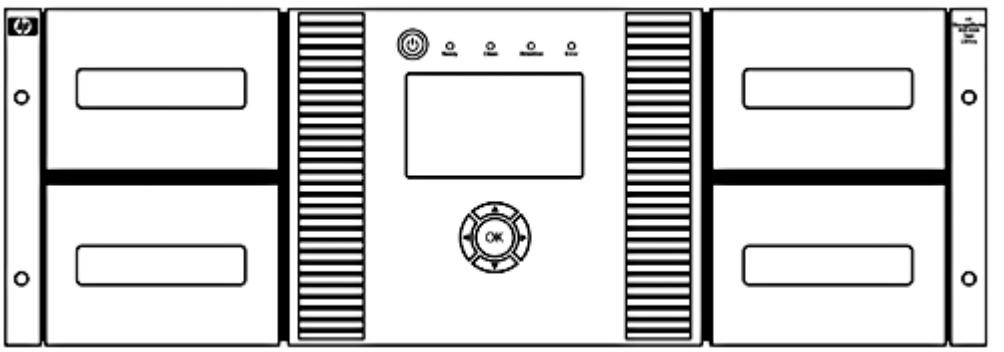
Overview

The HP StorageWorks MSL4048 Tape Library offers the maximum amount of storage into the minimum amount of space with 38.4 TB of compressed storage capacity in only a 4U form factor. Perfect for small to medium business, unattended workgroup backup and restore, or remote offices, the MSL4048 is easily managed from across the room or across the globe with a browser-based remote management interface reducing dependencies on local IT staff.

The MSL4048 Tape Library offers a broad choice of LTO tape drives including one or two HP StorageWorks Ultrium 960 Tape Drives, one or two Ultrium 960 Fibre Channel Tape Drives, or up to four HP StorageWorks Ultrium 448 Tape Drives. Easily manage your media with standard bar code reader, user configurable load port, and four 12-slot removable magazines. All MSL4048 Tape Library units arrive rack-ready for quick installation in a standard 19" rack but can be converted to a tabletop configuration with a conversion kit. Also, all MSL4048 Tape Library systems and associated kits are RoHS compliant.



What's New

- The HP StorageWorks MSL4048 Tape Library is now available with up to four Ultrium920 Drives

Key Features

- Exceptional storage density with up to 38.4 TB of compressed capacity in 4U (48 slots)
- Easy-to-use Web-based GUI
- Tool-free drive upgrades
- Supported with EBS for extensive compatibility testing
- Supported with L&TT: the most comprehensive diagnostic tool in the industry
- One or two Ultrium 960 SCSI or FC tape drives
- One to four Ultrium 448 tape drives
- One to four Ultrium 920 tape drives
- Four 12-slot removable magazines with load port
- Integrated bar code reader
- Broad HP Service & Support Offerings
- Rack ready, or table top configurations
- Factory rackable with other HP products

Overview

Customer benefits

- Automates data protection tasks to leave more time for other business issues
- Provides 38.4 TB of compressed storage capacity in a 4U form factor saving valuable rack space
- Hot swap drives make upgrading or replacing a drive quick and easy. Simply power down current drive and remove from the library. Insert new drive and power up from the front panel or remote management interface.
- Reduce installation time with rack-ready units
- Choose from a range of libraries, tape drives, and interfaces to best suit your needs
- Manage the library from across the room or across the globe with browser-based remote management interface
- Increase capacity and performance easily with tool-free drive upgrades
- Single cartridge or bulk loading of media with removable magazines and user configurable load port.
- Extensive compatibility testing to ensure the MSL4048 works with industry-leading servers, operating systems and backup software.

Family Comparison	MSL4048 Ultrium 960 FC Tape Library	MSL4048 Ultrium 960 Tape Library	MSL4048 Ultrium 920 Tape Library	MSL4048 Ultrium 448 Tape Library
Drive Technology	Ultrium 960 FC	Ultrium 960	Ultrium 920	Ultrium 448
Number of Drives	1 or 2	1 or 2	1 to 4	1 to 4
Capacity NOTE: compressed capacity assumes 2:1 compression	19.2 TB (native) 38.4 TB (compressed)	19.2 TB (native) 38.4 TB (compressed)	19.2 TB (native) 38.4 TB (compressed)	9.6 TB (native) 19.2 TB (compressed)
Maximum Data Transfer (native)	288 GB/hr (one drive) 576 GB/hr (two drives)	288 GB/hr (one drive) 576 GB/hr (two drives)	216 GB/hr (one drive) 864 GB/hr (four drives)	86.4 GB/hr (one drive) 345.6 GB/hr (four drives)
Maximum Data Transfer (compressed) NOTE: assumes 2:1 compression	576 GB/hr (one drive) 1.1 TB / hr (two drives)	576 GB/hr (one drive) 1.1 TB / hr (two drives)	432 GB/hr (one drive) 1.7 TB / hr (four drives)	172.8 GB/hr (one drive) 691.2 GB / hr (four drives)
Interface	4 Gb Native Fibre Channel	Ultra320 SCSI LVD/SE	Ultra320 SCSI LVD/SE	Ultra160 SCSI LVD/SE

Product Highlights

Capacity

The MSL4048 Tape Library offers different capacity points in a compact 4U form factor:

- The MSL4048 1 Ultrium 960/920 Drive Library supports 48 data cartridges for a total capacity of 38.4 TB (compressed). The MSL4048 1 to 4 Ultrium 448 Drive Library supports 48 data cartridges for a total capacity of 19.2 TB (compressed).

Manageability

The MSL4048 Tape Library allows web-based remote manageability; the unit can be monitored and managed from across the room or across the globe. Functions included in the management tool include:

- Status information on the drive and system
- System configuration operations and reporting
- System error and status logs
- Library and drive firmware upload capabilities
- Diagnostic tests and information
- Cartridge movement for maintenance and management purposes
- Cleaning cartridge support
- Security and access control
- SNMP support for IP communications

Easy Installation

The MSL4048 Tape Library is shipped as a rack-ready unit. The rack mount hardware included with the library allows installation in a variety of HP racks which include the 10000 series, 9000 series, 5000 series or System/E racks.

Serviceability

Modular in design , the MSL4048 Tape Library has easily replaceable components minimizing the Mean-Time-to-Repair on the unit. Replaceable components include the tape drive, the magazines, and the chassis,robot,power supply, controller board. HP StorageWorks Library and Tape Tools (L&TT) provides eay access to the MSL4048 error log, generates support tickets, and enables firmware downloads. L&TT can be downloaded for free at http://www.hp.com/support/tapetools.

LTO Ultrium Technology

HP StorageWorks LTO (Linear Tape Open) Ultrium Tape Drives use best of breed technology. By taking the best features from other tape technologies and combining them into a single new technology, Ultrium tape drives are in a league of their own. LTO technology is an open industry standard format; thus data written on HP StorageWorks Ultrium Tape Drives can be interchanged directly with Ultrium Tape Drives from other vendors.

Data Rate Matching

Data Rate Matching combines sophisticated buffer management with HP's exclusive Infinitely Variable Adaptive Tape Speed technology, to allow the tape drive to match its transfer rate to the host speed dynamically and continuously across the whole range of transfer rates. This feature ensures that the tape drive continues to stream data regardless of the environment, and brings two big advantages:

- It optimizes backup performance, regardless of the speed of the host or the network
- It minimizes rewinding and repositioning of the tape, reducing wear and increasing reliability

Product Highlights

HP Ultrium WORM

Critical to the success of data retention policies in highly regulated environments is the ability to store and manage data in an unalterable state. Following stringent guidelines set forth by regulatory agencies such as the SEC and HIPPA, IT organizations must now integrate new solutions and policies that can verify the integrity of stored data for periods that can extend well beyond seven years.
The Ultrium 960 and 920 tape drives features the ability to archive and store data in a non-rewriteable format that meets the most stringent regulatory guidelines. Using a combination of integrated fail-safe features in the drive firmware, cartridge memory, and tape formatting, the Ultrium 960 and 920 can archive large amounts of data for periods of up to 30 years in a secure, untampered state. Since all Ultrium 960 and 920 tape drives include support for both rewritable and WORM media, IT organizations can now easily integrate a secure, long-term archiving solution into their current data protection strategy. As compared to other technologies that feature support for WORM storage, the Ultrium 960 and 920 offers the advantages of:

- A single drive to support all backup and archiving needs
- Two distinctive tape cartridges to easily distinguish and manage both rewriteable and WORM data cartridges
- A specially designed WORM data cartridge with multiple integrated fail-safe features to prevent accidental or intentional overwriting of data
- High-capacity, low-cost HP WORM media that can store 800GB of data on a single data cartridge
- Support from many backup and archiving software vendors, providing the most comprehensive and mainstream support in the industry
- The LTO open standard that offers greater choice and compatibility across all third-generation Ultrium products

NOTE: While all HP Ultrium 960 tape drives support LTO Ultrium WORM media, some third-generation LTO Ultrium tape drives from other manufacturers may not include read and write support for LTO Ultrium WORM media. For non-HP third-generation LTO Ultrium tape drives, please check the manufacturers' specifications to ensure this support is provided if you are using your WORM media. If WORM support is not provided, the drive will eject the WORM tape cartridge immediately upon insertion into to the tape drive.

HP StorageWorks Library and Tape Tools

The MSL4048 Tape Library is supported on HP's industry-leading diagnostic tool - HP StorageWorks Library and Tape Tools (L&TT). L&TT is a single, convenient program that's a snap to install and simple to operate. L&TT's intuitive user interface eliminates the need for training and deploys in less than five minutes. This robust diagnostic tool is designed for both the experienced professional and the untrained administrator. It ensures product integrity through self-diagnostics and fast resolution to device concerns. Additional information on L&TT plus download information can be found at http://www.hp.com/support/tapetools.

Product Highlights

HP Storage Media

HP recommends that you use HP-branded cartridges in the MSL4048 Tape Library to assure the highest level of protection for your valuable data. The test program for HP media is the most thorough and comprehensive in the industry.

All HP cartridges must satisfy an exhaustive battery of additional tests that relate directly to real life situations, where real data and real businesses are at stake. The benefit of the HP brand specification for media is consistent quality. Through the testing of thousands of HP drives and HP cartridges, the ideal formulation for backup performance is defined and then continuously monitored. This hugely resource-intensive process is unique to HP and affords deep insight into the HP+HP backup solution for a wide range of environments and duty cycles. Your best choice for ease of support and maximum dependability is to use HP-branded Ultrium cartridges at all times.

Factory Express Portfolio for Servers and Storage

HP Factory Express offers configuration, customization, integration and deployment services for HP servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed. Customization must comply with all relevant product specifications and factory supported configurations.
Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. HP products supported through Factory Express include a wide array of servers and storage: HP Integrity, HP ProLiant, HP ProLiant Server Blades, HP BladeSystem, and HP 9000 servers as well as MSA, VA7xxx, EVA, and XP disk arrays, rackable tape libraries and configurable network switches.
Type of service support varies by platform and product family. For more information on Factory Express services for your specific server model or storage device please contact your sales representative or go to http://www.hp.com/go/factory-express.

Compatibility

HP's extensive compatibility testing program assures that your HP StorageWorks MSL4048 Tape Library works with leading servers, operating systems, and backup applications - and not just those sold by HP. The MSL4048 works seamlessly in many environments, making them especially suitable if you have a mixed system environment. For the latest list of servers, workstations, operating systems, and backup software that support the MSL4048, check the HP StorageWorks Enterprise Backup Solution compatibility matrix at http://www.hp.com/go/ebs.

Server Compatibility	The MSL4048 is supported on a wide range of HP systems. For details of which MSL4048 works with which systems, including third-party systems, reference the EBS compatibility matrix at http://www.hp.com/go/ebs for the latest hardware compatibility information.
OS Support	Reference the EBS compatibility matrix for the most up-to-date OS compatibility information at http://www.hp.com/go/ebs.
Software Support	Reference the EBS compatibility matrix for the most up-to-date software compatibility information at http://www.hp.com/go/ebs.

Service and Support, HP Care Pack, and Warranty Information

Warranty

The warranty for this product consists of 1-year parts exchange, next business day.

Warranty Upgrade Options

- Response - Upgrade on-site response from next business day to same day 4-hours
- Coverage - Extend hours of coverage from 5 days x 9 hours to 7 days x 24 hours
- Duration - Select duration of coverage for a minimum period of 1 year or multiple years

HP Care Pack Information

HP Care Pack is defined as an upgrade to the product warranty attribute, available for a specific duration and hours of coverage.

- HP Care Pack is not available for less than the products warranty duration.
- HP Care Pack is available for sale anytime during the warranty period for most products, but the commencement date will be the same as the warranty start date (delivery date to end user customer). Proof of purchase may be required.
- HP Care Pack services are prepaid.

For additional HP Care Pack (hardware & software) information, as well as orderable part numbers, please refer to the URL http://www.hp.com/hps/carepack/.

Hardware Product Services

- Installation services
- On-site Maintenance (includes warranty support)
- Response time upgrades during the warranty period
- Post-warranty coverage
- RAID setup and performance consulting via statement of work

For additional hardware installation and maintenance information, please refer to the URL listed below:
http://www.hp.com/hps/hardware/

eSupport

HP eSupport is a portfolio of technology-based services that assist you with managing your business environment - from the desktop to the data center.

Support Portal
The HP support portal provides one-stop access to the information, tools and services you need to manage the daily operations of your IT environment.

Features include:

- Access to self-solve tools (including search technical knowledge base)
- Efficient logging and tracking of support cases
- Collaboration with other business and IT professionals
- Download of patches and drivers
- Access to diagnostic tools
- Proactive notification of relevant information

Access to certain features of the support portal requires an HP service agreement. To access the support portal, visit http://www.hp.com/support

Service and Support, HP Care Pack, and Warranty Information

Support Services

HP Services provides up to a three-year, limited warranty, fully supported by a worldwide network of resellers and service providers and 9x5 hardware technical phone support during the warranty period. In addition, available service offerings include a full range of optional packaged hardware and software services:

- Installation and start up
- Extended coverage hours and enhanced response times
- System management and performance services
- Availability and recovery services

Components

The following brick level options/components do not have individual HP Care Pack Services. These items will be included in product HP Care Pack Services into which they are installed.

Disk Drives	Tape Drives	CD/DVD ROM	SCSI Hubs in SBBs	Adapters
Bus Converters	Backplane RAID Controllers	Power Supplies	Cabling	Fans

NOTE: The HP StorageWorks MSL4048 Tape Library comes standard with one or two drives, a 48-slot unit which is shipped rack-ready; a racking kit is included in the box. For specific regional power cord requirements, a separate power cord must be ordered.

Step 1 – Base Configuration

Select one:

Model Name	Model Description	Part Number
HP StorageWorks MSL4048 Tape Library	HP MSL4048 1 Ultrium 448 Drive Library	AG320A
	HP MSL4048 2 Ultrium 448 Drive Library	AG321A
	HP MSL4048 1 Ultrium 920 Drive Library	AH171A
	HP MSL4048 2 Ultrium 920 Drive Library	AH172A
	HP MSL4048 1 Ultrium 960 Drive Library	AG322A
	HP MSL4048 2 Ultrium 960 Drive Library	AG323A
	HP MSL4048 1 Ultrium 960 FC 4 Gb Drive Library	AG324B
	HP MSL4048 2 Ultrium 960 FC 4 Gb Drive Library	AG325B

Kit Contents (for each library):

- 6 VHDCI to HDTS68 SCSI cable (1 per tape drive)
- 0.5M LVD HDTS to LVD HDTS daisy chain cable (Ultrium 448/920 configurations only)
- (1) RJ-45 Ethernet cable
- HDTS68 SCSI terminator (1 per SCSI tape drive)
- Rack mount hardware (for use with HP 10000 series, 9000 series, 5000 series or System/E racks)
- Documentation kit including User & Service Guide (CD) and Getting Started Poster

Step 2 – Required Options

Select each required option with quantities specified:

Power Cord	Description	Quantity	Part Number
	Power Cord, US NOTE: can be used to connect the rack mounted device to PDUs with NEMA 5-15R receptacles	1 each	E7743A
	PDU Power Cord NOTE: can be used to connect the device to PDUs with IEC-320 receptacles	1 each	E7742A
	Power Cord, European	1 each	AD526A
	Power Cord, Australian	1 each	AD527A
	Power Cord, United Kingdom	1 each	AD528A
	Power Cord, Switzerland	1 each	AD529A
	Power Cord, Denmark	1 each	AD530A
	Power Cord, Japan	1 each	AD531A
	Power Cord, South Africa	1 each	AD532A
	Power Cord, China	1 each	AD533A
	Power Cord, Latin America (2 cords)	1 each	AD534A
	Power Cord, Taiwan	1 each	AF913A

NOTE: One power cord is required; there is no power cord included in the box with the MSL4048. Please select the correct power cord for your geographical location.

Configuration Information

WARNING: This product can ONLY be used with an HP approved power cord for your specific geographic region. Use of a non-HP approved power cord may result in: 1) not meeting individual country specific safety requirements; 2) insufficient conductor ampacity that could result in overheating with potential personal injury and/or property damage; and 3) an unapproved power cord could fracture resulting in the internal contacts being exposed, which potentially could subject the user to a shock hazard. HP disclaims all liability in the event a non-HP approved power cord is used.

Related Options

Factory Racking	Factory integrate the MSL4048 Tape Library with other HP products such as HP ProLiant Servers. NOTE: #0D1 will appear after the MSL4048 Tape Library part number on the sales order if HP factory integration is indicated.	#0D1
Tape Drives	HP MSL 2024/4048 Ultrium 448 Drive Upgrade Kit NOTE: for use with the MSL4048 Ultrium 448 Drive Library to upgrade from one to four drives	AG118A
	HP MSL 2024/4048 Ultrium 920 Drive Upgrade Kit NOTE: for use with the MSL4048 Ultrium 960 Drive Library to upgrade from one to four drives	AH173A
	HP MSL 2024/4048 Ultrium 960 Drive Upgrade Kit NOTE: for use with the MSL4048 Ultrium 960 Drive Library to upgrade from one to two drives	AG327A
	HP MSL 2024/4048 Ultrium 960 FC 4 Gb Drive Upgrade Kit NOTE: for use with the MSL4048 Ultrium 960 Drive Library to upgrade from one to two drives	AG328B
Fibre Channel Router	HP StorageWorks N1200-320 4Gb Network Storage Router NOTE: For SCSI to Fibre Channel connectivity with the MSL4048 tape libraries. One network storage router is needed for every two drives. Reference the EBS compatibility matrix for the most up-to-date compatibility information at http://www.hp.com/go/ebs.	AG314A
Magazines	HP MSL4048 Ultrium Left Magazine Kit NOTE: For use in the MSL4048 Tape Libraries in either the upper or lower left position.	AG330A
	HP MSL2024/4048 Ultrium Right Magazine Kit NOTE: For use in either the MSL2024 or MSL4048 Tape Libraries. For the MSL4048 Tape Libraries the Right Magazine Kit is used in either the upper or lower right position.	AG120A
Rack-to-Tabletop Conversion Kits	HP MSL4048 Rack-to-Tabletop Conversion Kit NOTE: for use in converting the rack-ready MSL4048 Tape Library into a desktop model.	AG329A

Related Options

Rack Cabinets	10622 (22U) Rack Cabinet - Shock Pallet	245163-B22
	10636 (36U) Universal Rack Cabinet - Shock Pallet	AF012A
	10636 (36U) Universal Rack Cabinet with extension - Shock Pallet	AF014A
	10642 (42U) Universal Rack Cabinet - Shock Pallet	AF002A
	10642 (42U) Universal Rack Cabinet with extension - Shock Pallet	AF004A
	NOTE: The MSL4048 Tape Library is certified to ship in HP 10000 series racks which include a shock pallet. It is mandatory to use a shock pallet in order to ship racks with equipment installed.	
	5642 (42U) Rack Cabinet	358254-B21
	NOTE: this rack ships unassembled and boxed on a standard size pallet. It is an industry standard 19" wide rack with side panels and rear doors; it does not ship with the front door or casters.	
	NOTE: for additional HP ProLiant rack information, visit http://h18004.www1.hp.com/products/servers/proliantstorage/racks/index.html	
Media	HP Ultrium 800GB RW Data Cartridge (1 pack)	C7973A
	HP Ultrium 800GB WORM Data Cartridge (1 pack)	C7973W
	HP Ultrium 400GB data cartridge (1 pack)	C7972A
	HP Ultrium Universal Cleaning Cartridge (1 pack)	C7978A
	HP Ultrium 3 RW Bar Code Labels (100 pack)	Q2007A
	HP Ultirum 3 WORM Bar Code Labels (100 pack)	Q2008A
	HP Ultrium 2 Bar Code Labels (100 pack)	Q2002A
	Non-Custom Labeled Data Cartridges	
	NOTE: Non-Custom labels will come pre-labeled with a pre-determined number sequence	
	HP Ultrium 400GB Non-Custom Labeled Data Cartridge (20 pack)	C7972AN
	HP Ultrium 800GB RW Non- Custom Labeled Data Cartridge (20 pack)	C7973AN
	Custom labeled Data Cartridges	
	NOTE: Custom labeled products allow customers to customize a specific sequence printed on each label.	
	HP Ultrium 800GB RW Custom Labeled Data Cartridge (20 pack)	C7973AL
	HP Ultrium 800GB WORM Custom Labeled Data Cartridge (20 pack)	C7973WL
	HP Ultrium 400GB Custom Labeled Data Cartridge (20 pack)	C7972AL
	Media Kits	
	HP Ultrium 200 GB Storage Media Kit	C8013A
	HP Ultrium 400 GB Storage Media Kit	C8014A
	NOTE: Each Media Kit includes twenty Ultrium 200GB (C7971A) or Ultrium 400GB (C7972A) Data Cartridges, one HP Ultrium Universal Cleaning Cartridge (C7978A), twenty colored labels (without barcodes), and a protective carrying case that can be used to securely store or transport data cartridges, one free copy of "The Essentials of Successful Tape Backup," and one free copy of HP's Storage Works Data Protector Express Evaluation Software (60 day free trial). For more information please visit: http://www.hp.com/go/storagemedia.	

Related Options

Host Bus Adapters	Reference the EBS compatibility matrix for the most up-to-date SCSI HBA compatibility information at http://www.hp.com/go/ebs	
SCSI Cable Kits	6 ft VHDCI/HDTS68 SCSI Cable Kit	341176-B21
	6ft 68pin VHDCI to 68pin HD SCSI Cable	341176-B21
	12ft 68pin VHDCI to 68pin HD SCSI Cable	341177-B21
FC Cable Kits	2m SW LC/SC FC Cable Kit	221691-B21
	5m SW LC/SC FC Cable Kit	221691-B22
	15m SW LC/SC FC Cable Kit	221691-B23
	2m SW LC/LC FC Cable Kit	221692-B21
	5m SW LC/LC FC Cable Kit	221692-B22
	15m SW LC/LC FC Cable Kit	221692-B23
HP Care Pack Options	Same Day Response	
	Warranty upgrade to 1-year, 13x5, 4 hour response/onsite, electronic	UD830E
	Warranty upgrade to 1-year, 24x7, 4 hour response/onsite, electronic	UD831E
	Warranty upgrade to 1-year, 24x7, call-to-repair, 6 hour response/onsite, electronic	UD832E
	Warranty upgrade to 3-year, 13x5, 4 hour response/onsite, electronic	UD834E
	Warranty upgrade to 3-year, 24x7, 4 hour response/onsite, electronic	UD835E
	Warranty upgrade to 3-year, 24x7, call-to-repair, 6 hour response/onsite	UD836E
	Warranty upgrade to 4-Year, 13x5, 4 hour response/onsite, electronic	UD837E
	Warranty upgrade to 4-Year, 24x7, 4 hour response/onsite, electronic	UD838E
	Warranty upgrade to 5-year, 13x5, 4 hour response/ onsite, electronic	UD839E
	Warranty upgrade to 5-year, 24x7, 4 hour response/onsite, electronic	UD840E
	Warranty upgrade to 1-year, 13x5, 4 hour response/onsite, electronic	UD830E
	Warranty upgrade to 1-year, 24x7, 4 hour response/onsite, electronic	UD831E
	Warranty upgrade to 1-year, 24x7, call-to-repair, 6 hour response/onsite, electronic	UD832E
	Next Business Day Response	
	Warranty upgrade to 3-year next business day/onsite	H4619A
	Warranty upgrade to 3-year next business day/onsite, electronic	UD833E
	Hardware Services	
	Installation for storage (per event), electronic	U4823E
	Installation and Startup Services	UA871E

NOTE: HP installation and startup service provides for the installation and implementation of HP StorageWorks MSL Tape Library in SAN environments.

NOTE: 'E' signifies an electronic HP Care Pack.

NOTE: In order to maximize ROI and product uptime, and minimize the cost of ownership, Hewlett-Packard recommends the 3-year, 24 x 7 service options. These offerings will ensure that any product issue can be tackled when they occur (most back up issues will occur outside standard business hours) and that the service coverage regarding period, covers the minimum expected life of the host system.

		MSL4048 Ultrium 960 FC	MSL4048 Ultrium 960	MSL4048 Ultrium 920	MSL4048 Ultrium 448
Drive Technology		Ultrium 960 FC	Ultrium 960	Ultrium 920	Ultrium 448
Maximum Drive Transfer Rate (Native)		80 MB/s	80 MB/s	60 MB/s	24 MB/s
Number of Drives		1 to 2	1 or 2	1 or 4	1 to 4
Number of Slots		48	48	48	48
Capacity	Native	19.2 TB	19.2 TB native	19.2 TB native	9.6 TB
	Compressed	38.4 TB	38.4 TB	38.4 TB	19.2 TB
Interface		4 Gb Native Fibre Channel	Ultra320 SCSI LVD/SE	Ultra320 SCSI LVD/SE	Ultra160 SCSI LVD/SE
Maximum Transfer Rate	Native	288 GB/hr (one drive) 576 GB/hr (two drives)	288 GB/hr (one drive) 576 GB/hr (two drives)	216 GB/hr (one drive) 864 GB/hr (four drives)	86.4 GB/hr (one drive) 345.6 GB/hr (four drives)
	Compressed NOTE: assumes 2:1 compression	576 GB/hr (one drive) 1.1 TB / hr (two drives)	576 GB/hr (one drive) 1.1 TB / hr (two drives)	432 GB/hr (one drive) 1.7 TB / hr (four drives)	172.8 GB/hr (one drive) 691.2 GB / hr (four drives)

Dimensions	Out-of-Box (HxWxD)	6.8 in X 17.5 in X 30.5 in (17.4 x 44.5 x 77.47 cm)
	Shipping (HxWxD)	13.5 in X 23.4 in X 39.1 in (34.4 x 59.6 x 99.4 cm)
Weight	Out-of-Box	65.91 lbs (25.6 kg)
	Shipping	83.5 lbs (31.2 kg)
Reliability	MSBF (Mean swaps between failure): 2 Million robot load/unload cycles MTBF (Mean Time Between Failure): 100,000 hours, based on 2 million MSBF	
Average Cartridge Swap Time	45 seconds (drive to slot)	
Initialization Time	80 to 120 seconds	
Connectors	(2) 68-pin HDTS (located on back of MSL4048) (1) RJ-45 (located on back of MSL4048)	
Inventory Time	4 minutes	
LED Indicators (On Front Panel)	Ready LED (Green): shows ready status information Clean LED (Amber): shows fault status information Attention LED (Amber): shows fault status information Error LED (Amber): shows fault status information	
Power	150 Watts (max)	
Input Requirements	100 to 240 VAC, 50 to 60 Hz, 2.0 Amperes	
Relative Humidity (non-condensing)	Operating	10 % to 80%
	Shipping	10 % to 90%
Temperature Range (wet bulb)	Operating	50° to 95° F (10° to 35° C)
	Shipping	-22° to 140° F (-30° to 60° C)
Altitude	Operating	10,000 ft (3048 m)
	Shipping	35,000 ft (10,675 m)

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